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Energy Expenditures of Canadians, 1969-1982

ENERGY TYPOLOGIES

by

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ENERGY TYPOLOGIES

ABSTRACT

Lifestyles dictate energy use in the home and for personal transportation. In making decisions about the way we live, we establish energy expenditures which may be difficult to control as energy prices rise. In order to deal with energy use patterns and lifestyles as a set of consumption decisions, an energy typology matrix is developed by dividing in-home and gasoline energy expenditures into high, medium and low levels. Data from the six Family Expenditure Surveys from 1969-1982 are used to study the lifestyles of those in occupants in each of the nine energy expenditures cells with respect to all expenditure categories and several demographic characteristics. This is done to develop a lifestyle profile for the different patterns of energy use. Further analysis of energy expenditures on a per capita, a per room and per room per 1000 degree day basis and analysis of insulation expenditures provide information about the nature of energy expenditure increases and efforts to restrain them. Energy conservation efforts are most evident among those with higher education levels and higher energy use levels (Hippos and Bears). However, those with more limited resources (Churchmice) have experienced larger relative increases in energy expenditures.

INTRODUCTION

The impacts of rapidly rising energy prices differ across households depending on their usage levels, needs and resources. However, most studies of energy use examine aggregate data across the entire population without consideration of the range of lifestyles within the population. Such aggregate analysis can hide the real hardship being experienced by some, the conservation efforts conscientiously undertaken by others, and the subtle shifts in lifestyles made in efforts to adapt to the changing conditions of the new energy reality. This study develops nine subcategories of energy use and then examines the occupants of the categories for information on how they are living and adjusting. Such information can aid those who are trying to reach energy consumers with conservation messages and incentive programmes properly targeted to the needs and interests of the group. Further it can indicate more clearly which subgroups of the population are in need of special assistance in dealing with the impact of large increases in energy prices.

Studying energy use by household consumers is a very difficult process. Actual energy consumption data is hard to get and is highly suspect in many

cases. The problems arise from the fact that most households do not keep long-term information on their ongoing energy purchases. Moreover, since the 1972 'energy crisis' and subsequent pressures on Canadians to conserve, most respondents are cautious to say that they do try to conserve energy and that they have been cutting back on its use. So answers to questions on use are highly reactive. Even worse, it is quite possible that the bias due to self-reporting may be unevenly distributed across the population. Those with higher incomes and educations have repeatedly been found to be more sensitive to energy conservation issues and to report more conservation-oriented attitudes. However, energy use has also been consistently related to incomes. Therefore, there might be more under-reporting of energy use among those who, on attitude measures, are the most conservation-minded but yet are using more energy than those with lesser incomes. Non-reactive and reasonably accurate measures are needed.

Another problem which makes energy research difficult is that it is difficult to get comparative data over long periods of time. To assess the impact of the 'energy crisis' at the individual level, data must be available from before and after key events in the history of that crisis period. However, it was only after the beginning of the energy situation that researchers generally became interested in energy consumption and began collecting information on usage rates. Retrieving comparable information from pre-crisis years is very difficult. Certainly respondent recall is not adequate.

In some studies consumption data has been obtained from utility company records (Heslop 1981, McDougall et al. 1979). Such records are excellent sources of detailed data that are not reactive and are historical. However, it has proven very difficult to obtain such data on large samples of respondents. Utility companies require signed releases before they will allow consultation of records on households. Also in many cases, records are not kept by suppliers longer than two years. Finally, the number of suppliers of home heating fuel is quite large especially if a large geographical area is being studied. In a recent study (McDougall et al. 1979), electricity utility records could only be obtained on about 50% and gas and heating oil records on about one-third of respondents who were members of a research panel and, therefore, more likely to co-operate.

The Family Expenditure Survey data base produced by Statistics Canada offers many advantages under these circumstances. Detailed expenditures on a national sample of households were collected in 1969, 1972, 1974, 1976, 1978 and 1982. So the set of surveys provide a measure of expenditures during the time period preceding the 1973 "crisis", includes an early post-1973 measure, one preceding the large price increases in 1978-79, and one following them during a time of moderating and stabilizing prices. Sample sizes are typically several thousand and the sample is nationally representative. There is no problem arising out of selection into the sample because of personal interest in the subject matter. The information on energy use can be considered as non-reactive. Respondents are asked about energy expenditures just as they are asked about all other expenditures. So the respondent is likely to be less sensitive to give the "right" answers. The study is not focussed on energy use itself. The data includes energy expenditure information in dollar terms, but not in quantity terms. Where accurate price information is available, conversions are possible. However, in order to make these conversions within-year price changes make it necessary to do some rather rough interpolations of proportions of the total year's energy which may be consumed at different times of the year. This would be a highly judgmental process and so was not undertaken in this project. So this study is of energy expenditures as one measure of energy use.

The data set also includes a wealth of other information which can be linked to energy use, including expenditures on other categories of goods and services, demographic information on family composition, age, income and education of the head, and also capital goods information such as dwelling type, size and location, and appliance ownership. The use of this information along with energy expenditures allows for the profiling of the lifestyle of the energy user and the factors associated with energy use.

The data set is not without its problems, however. There have been many changes over the years in how some categories of expenditures have been handled in reporting. For this study, these categories were manipulated where necessary to provide for a consistency in categorization across the 13-year period. As far as possible the 1982 categorization format was used.[1]

The study is a recall study, but considerable care is taken to aid recall and householders can check personal records for assistance. The data is collected in the first three months of the year following the year under study to minimize recall difficulties. Therefore, errors are likely to be relatively small and random.

Data on direct energy use is only available from those households who pay directly for their energy. Apartment dwellers by and large and especially during the earlier periods under study were on bulk meters. Therefore, how much they actually pay for their in-home energy cannot be determined as their rent payments include some unknown proportion for energy. Some studies have arbitrarily assigned a certain proportion of the rent to be the measure of energy use. However, this has not been done here. Where the procedure has been used, the judgments as to the rental proportion going to energy have been vaguely and arbitrarily set as a fixed proportion of rents. There appears to be no justification for this technique, except to increase sample size. Furthermore, renters can usually do very little to control energy use in their dwelling and have no incentive to do so. They are, therefore, likely to be far less sensitive to energy price increases and efforts to encourage conservation. It should also be kept in mind that such renters are atypical of the entire population. They are likely to have lower incomes and be younger than average or older with small families. So, because accurate in-home energy consumption on such apartment renters is not available and because they are a less important set of energy consumers in terms of the amount they consume and as targets for conservation activities, they have been removed from the sample. Their energy levels especially within the home are likely to be lower than average.

Also rejected from the sample were part-year families, who lost or gained members or who were formed in the year to ensure that such major within-year changes did not affect the ability of models used in the study to explain variances in expenditures. Therefore, only full-year households who were owners and renters of houses - detached, semi-detached, row, town - and who made payments directly for their energy were included in the sample.

Two main measures of direct energy use are used in this study - in-home energy and transportation energy for the personal use of the car or truck. The in-home energy expenditures measure was created by combining heating and electricity information. This was done because there was no feasible way to determine what proportion of an electrically-heated home's electricity was used for home heating and how much was used for lighting and cooking. Similar problems arise in the case of other fuels which have multiple uses.

TYPOLOGIES OF ENERGY USE

In a recent study for the Ministry of Consumer and Corporate Affairs, McDougall, Ritchie and Claxton (1979) drew up a framework or typology to aid them in interpreting and explaining their findings. They thought it would be helpful to determine the characteristics of consumers on the basis of what combination of energy they consumed in the home and in their cars. So they set up a matrix combining these two areas of energy use and dividing consumers on the basis of quartiles of energy use. The two middle quartiles were combined, leaving a high, medium and low level of consumption on each type of energy and generating a 3x3 format for the matrix as shown in Table 1. The corner cells and the centre cell were given names designed to typify the consumption patterns of the cell. They provided an easy way to remember the relative consumption levels of the cell members. The focus of the McDougall et al. (1979) work was to study the characteristics of the cell occupants to try to understand why their relative consumption patterns varied from those in other cells.

The purpose of this paper is to explore the results of a partial replication of this typology construction using the Family Expenditure Survey data as the measure of consumption. Two major differences arise between the McDougall et al. (1979) work and this paper. They had available to them only one year's data, whereas this study has data on six years over a 13-year period. Also, their cells were constructed using BTU estimates. These estimates were developed from information on utility bills and BTU conversions were made for the fuel used for in-home energy. Respondent approximations of gasoline

TABLE 1
Energy Consumption Taxonomy - Labels

		LEVEL OF IN-HOME ENERGY CONSUMPTION			
		Low (<127 Mil. kJ)	Medium (127-222 Mil. kJ	High (>222 Mil. kJ)	Total
LEVEL OF AUTOMOBILE GASOLINE CONSUMPTION	Low (<1136 litre)	CHURCH MOUSE 4.5% of sample	9.8% of sample	BEAR 2.5% of sample	16.8
	Medium (1136-4545 litre)	14.5% of sample	BEAVER 33.7% of sample	12.3% of sample	60.5
	High (>4545 litre)	ROADRUNNER 4.0% of sample	12.6% of sample	HIPPO 6.1% of sample	22.7
	TOTAL	23.0	56.1	20.9	100.0

Source: McDougall, Gordon H.G., Ritchie, J.R Brent, Claxton, John D. (1979), "Energy Consumption and Conservation Patterns in Canadian Households Overview" Behavioral Energy Research Group, 203-2053 Main Hall, University of British Columbia.

consumption for transportation energy were obtained and then conversions made to BTU's. In this study, the consumption matrix is based on dollar expenditures. The main difference lies in the effect of differential fuel pricing patterns across the country. In using expenditures as the basis for comparisons, this study more directly focusses on the characteristics of those who are spending different amounts on energy and who logically over time would have different incentives to alter their consumption.

The emphasis in this paper will be in studying the characteristics of those in the different cells of the matrix and in the changes in these characteristics over time. Such analysis will be helpful in identifying the reasons for different consumption levels and the likely impacts of the energy expenditure burdens carried by different groups. It will also indicate what adjustments are being made given the changes in the energy markets over the period under study. The characteristics to be examined will include demographic, household, and housing characteristics and expenditure patterns for non-energy commodities. From this information, quite a clear picture can emerge concerning the lifestyle patterns of those whose expenditures for energy differ markedly.

RESULTS

Table 2 indicates the expenditure level which defined each of the cells in each of the survey years and Table 3 presents the population distribution across the cells. Again, these cell limits were determined by dividing the sample into quintiles on each of the two energy expenditure measures and collapsing the two middle quarters to form the medium level category. As can be seen in Table 2 there was a very large jump in the upper boundaries of each cell of in-home energy between 1978 and 1982 and lesser but still large increases between 1974 and 1976 and also between 1976 and 1978. It must be remembered that the largest gap involved a four-year time period whereas the other two are only two years in length. However, even when this is taken into account the 1978 to 1982 gap appears to be the largest and was, in fact, the period of highest fuel price increases. For transportation energy, the major increases were between 1972 and 1974, 1974 and 1976 and especially between 1978 and 1982. The 1976 to 1978 increases were quite small in comparison.

TABLE 2
Expenditure Limits of Typology Cells,
8 Major Cities Sample, 1969-1982

Year	Quantile Upper Limits Typology Cell					
	In-Home Energy			Transportation Energy		
	Low	Medium	High	Low	Medium	High
	$	$	$	$	$	$
1969	228	296	360	36	220	350
1972	272	348	420	80	240	400
1974	331	423	540	120	316	535
1976	460	574	720	180	456	723
1978	582	722	903	210	500	802
1982	985	1189	1480	435	960	1550
% Change 1969-1982	332%	302%	311%	1108%	336%	343%

TABLE 3
Distribution of Sample Across Typology Cells,
8 Major Cities Sample, 1969-1982

Typology Cell			% of Sample in Each Cell					
		Year	1969	1972	1974	1976	1978	1982
In-Home Energy Expenditure	Car and Truck Fuel Expenditure	Nickname						
Low	Low	(Churchmice)	8.3	9.6	10.4	9.1	8.7	8.6
Low	Medium		6.1	16.1	15.9	13.0	14.3	14.4
Low	High	(Roadrunners)	10.5	6.9	4.7	3.7	3.8	3.8
Medium	Low		10.9	9.0	12.7	9.7	9.7	10.8
Medium	Medium	(Beavers)	12.6	23.1	21.9	24.8	24.6	23.5
Medium	High		26.2	11.2	9.6	12.3	11.9	12.5
High	Low	(Bears)	4.5	5.8	5.9	5.6	5.8	5.5
High	Medium		6.9	11.5	11.2	13.4	12.0	12.4
High	High	(Hippos)	14.0	6.9	7.7	8.5	9.2	8.5
Total Sample Size			2836	1986	2316	1998	1834	2169

It is not surprising given the procedure for forming the divisions that the largest group of households (usually comprising about 1/4 of the sample) appears in the middle cell of the matrix - the "Beavers" (see Table 3). Only in 1969 was this not the largest group, and instead about 1/4 of the sample was in the medium level on in-home energy but high on transportation energy (medium-high). An overview of all the figures indicate little change in relative cell sizes. Some that should be noted, however, occurred between 1969 and 1972 when there was a large increase in the percentage in the low-medium cell and a similar decline in the percentage of low-highs (Roadrunners); an increase in medium-mediums (Beavers) and a similar-sized decrease in medium-lows; an increase in high-mediums and a slightly larger drop in high-highs (Hippos). Since that time, the percentage of Roadrunners declined further between 1972 and 1974 and again between 1974 and 1976 before levelling off. Other changes have not been stable or sustained from one time period to the next.

ENERGY USE

Characteristics of the Main Cells

In this section each of the five main cells (the four corner cells and the centre one) is discussed in detail. This discussion includes information on their main characteristics and how these have changed over the period under study. To aid in this discussion, the tables in each section summarize the findings for the cell being discussed. The data in these tables is presented simply in terms of rank order of the cell among all nine cells as a summary measure for the reader. However, the Appendix tables contain the detailed demographic, house characteristics and exact average and percentage expenditures for all nine cells.

LOW IN-HOME - LOW TRANSPORTATION (Churchmice)

The 'Churchmice' (Table 4) are the most disadvantaged group. They consistently have the lowest incomes and spend the least amount on food,

TABLE 4
Rank Position of Those in the Low-Low Energy Expenditure Cell (Churchmice) on Demographic and Expenditure Categories, 8 Cities Sample, 1969-1982

	Churchmice (Ranking out of 9)					
	Year					
	1969	1972	1974	1976	1978	1982
INCOME (HIGHEST = 1)	9	9	9	9	9	9
AGE OF HEAD (YOUNGEST = 1)	8.5	8	9	9	9	9
FAMILY SIZE (SMALLEST = 1)	1	1	1	1	1	1
STAGE OF FAMILY LIFE CYCLE*	6,7,8,9	6,8,9	6,7,8,9	6,7,8,9	6,7,8,9	6,7,8,9
NUMBER OF ROOMS (LOWEST = 1)	1	1	1	1	1	1
TYPE OF DWELLING*	N.A.	4	4	2,4	4	4
PROVINCE*	Q, A	Q,M,A	M,O	Q,West	Q,Man,A	West
Education	1	1	1	1,2	1	1,2
Expenditures						
Dollar Levels (Highest = 1)						
Total Current Expenditures	9	9	9	9	9	9
Total Consumption	9	9	9	9	9	9
Food	9	9	9	9	9	9
Food Away From Home	9	9	9	9	9	9
Shelter	9	9	9	9	9	9
Owned Living Quarters	9	9	9	9	9	9
Rented Living Quarters	1	2	1	2	3	1
Household Operation	9	9	9	9	9	9
Clothing	9	9	9	9	9	9
Transportation	9	9	9	9	9	9
Transportation Services	5	8	7	9	8	7
Tobacco and Alcohol	9	9	9	9	9	9
Household Furniture and Equipment	9	9	9	9	9	9
Recreation	9	9	9	9	9	9
Reading and Education	9	9	9	9	9	9
In-Home Energy	9	9	9	8	9	9
Gasoline	8	9	7	7	9	8
Percentage of Total Expenditures (Highest = 1)						
Food	1	1	1	1	1	1
Food Away From Home	8.5	9	9	3	9	8
Shelter	1	1	2	2	1	2
Owned Living Quarters	9	6	9	3	3	6
Rented Living Quarters	1	1	1	1	1	1
Household Operation	2	2	2	1	2	3
Clothing	8	8	8	6	5	9
Transportation	8	8	7	8	7	7
Transportation Services	2	1	1	1	1	1

TABLE 4
Rank Position of Those in the Low-Low Energy Expenditure Cell (Churchmice) on Demographic and Expenditure Categories, 8 Cities Sample, 1969-1982 - Concluded -

	Churchmice (Ranking out of 9)					
	Year					
	1969	1972	1974	1976	1978	1982
Tobacco and Alcohol	1	2	1	2	1	3
Household Furniture and Equipment	9	7	6	2	6	2
Recreation	7	9	7	9	7	9
Reading and Education	9	5	5	4	3	3
In-Home Energy	3	3	4	4	4	4
Gasoline	8	8.5	7	7	7	7

Key:
* In these rows are listed the findings on which of the categories of the variable had disproportionately high levels of the group under study.

N.A. - data was not collected on this variable in that year.

Stage of Family Life Cycle
1 - Household head < 45 years of age, no children
2 - Household head < 45 years of age, 1 or more children < 5 years of age
3 - Household head 45-64, 1 or more children < 16 years of age
4 - Household head 45-64, all children 16 or more years of age
5 - Household head 65 years of age or older
6 - Unattached individual < 45 years of age
7 - Unattached individual 45-64 years of age
8 - Unattached individual 65 years of age or older

Type of Dwelling
1 - Single detached house
2 - Semi-detached, double or single attached house
3 - Row house
4 - Duplex

Education Level Completed
1 - < Grade 9
2 - Partial secondary
3 - Complete Secondary
4 - Post-secondary (non-university) partial or complete
5 - University partial
6 - University degree or diploma

Province
N - Newfoundland
NS - Nova Scotia
NB - New Brunswick
Marit - All 3 of N, NS, NB
Q - Quebec
O - Ontario
M - Manitoba
A - Alberta
BC - British Columbia
West - All of M, A, BC

shelter, especially owned accommodation, household operation, clothing, transportation, tobacco and alcoholic beverages, furniture and equipment, reading and education and in-home energy. Although these dollar expenditures are low, their percentage of total expenditures spent on food, shelter component of rent, household operation, and tobacco and alcoholic beverages are among the highest, leaving little for more discretionary categories.

In 1982, their average income before taxes as reported in the Family Expenditure Survey was $20,566, up 343% from their 1969 average of $4,639. Their energy expenditures in the home had increased 318% between 1969 and 1982 going from $164 to $686. The average gasoline expenditure for those who did report some expenditure in this category went from $25 to $271, an increase of 984%. However, many 'Churchmice' do not report any expenditures on gasoline so the average across all members of this group went from $1.62 to $133 in the same period.

'Churchmice' live in the smallest dwelling units, usually multiple unit dwellings, and have the smallest families. The heads of families in this group have the oldest average age, but the distribution of heads by age group as shown in the Appendix Table indicates there are many young families in this group as well. It would appear then that this group is made up of many single or two-person households of senior citizens or young persons with or without children. Their education level is the lowest.

Changes 1969-1983 in Churchmice

The picture of the 'Churchmice' changes little over the 13-year period. This group seems consistently to be stuck at the bottom. Since this group appears to be composed of elderly and perhaps young single parents or young unemployed with low skill levels, this lack of upward mobility is not surprising. One bright note may exist in what appears to be an increase in education levels in recent years. Analysis of adjacent typology cells suggests that some of the elderly may be moving up the typology, especially with regards to gasoline expenditures. Others of higher education levels who had been in higher consumption level cells also may have moved down relatively through conservation activities.

About the only expenditure level changes which can be seen are some increases in relative position in spending on reading and education as a percentage of expenditures and a decline in tobacco and alcoholic beverage expenditures as a percentage. However, these are minor categories of expenditures.

Energy expenditures have outstripped increases in income. The average income of this group has increased more than the overall average income of 276%. This may be due mainly to increases in government pensions which rose faster than average incomes during the latter half of the period under study. Their in-home energy expenditure increases were just slightly above the overall average of 313%. However, their gasoline expenditures increased dramatically, likely because more people were driving. There was a substantial difference between the average gasoline expenditure overall in this cell and average gasoline expenditure for only those reporting some expenditures on gasoline. Also in relative terms, the Churchmice devoted a greater percentage of expenditures to gasoline in later periods, rising from being tied for bottom position in 1969 and 1972 to seventh ranking after 1972. This is likely due to an increase that appears to be occurring in the use of cars among the elderly population.

LOW IN-HOME - HIGH TRANSPORTATION (Roadrunners)

The picture that emerges of those who spend a great deal on gasoline but relatively little in the home (Table 5) is of a young person with an above-average income, a smaller than average family, living in a small multiple-unit dwelling. Roadrunners are also more likely to live in the Western provinces and to have some post-secondary education. Since 1974, this group has been the smallest group in the sample, so caution is advised regarding reliance on the exact level of expenditures data for this group. However, the pattern in the last three survey years when sample sizes were smallest is reasonably consistent with that of earlier periods.

In terms of other expenditures, they spend a relatively small amount on food, shelter, household operation, transportation services, and in-home energy. They spend relatively large amounts on food away from home, both in a dollar terms and as a percent of their total expenditures, and on rent, total transportation, tobacco and alcoholic beverages, recreation and, of course, gasoline.

Changes in 1969 to 1982

The income of this group increased by 288%, slightly above the increase in average income. Their in-home energy expenditures increased from $179 to $758 by 323%, again slightly above the average increase. However, their gasoline expenditures increased by 504% from $366 to $2,209, well above the average increase of 368%.

The 1982 data suggest a decline in the education level of the 'Roadrunner' group. Also, families at the later "full nest" stages and young singles now appear in disproportionately high numbers in this group. Transportation services expenditures have shown a relative increase. Clothing, in dollar terms and as a percentage of expenditures, has decreased relative to other groups. Also, the more recent periods note relative declines in recreation, reading and education. It appears that the burdens of very high driving costs are being paid for by cutbacks in these other areas.

TABLE 5
Rank Position of Those in the Low-High Energy Expenditure Cell (Roadrunners) on Demographic and Expenditure Categories, 8 Cities Sample, 1969-1982

	Roadrunners (Ranking out of 9)					
	Year					
	1969	1972	1974	1976	1978	1982
INCOME (HIGHEST = 1)	4	4	4	4	4	4
AGE OF HEAD (YOUNGEST = 1)	1	1	1	1	1	2
FAMILY SIZE (SMALLEST = 1)	4	4	3	4	4	4
STAGE OF FAMILY LIFE CYCLE*	1,2	1,3	1,2	1,2	1,2	1,5,7
NUMBER OF ROOMS (LOWEST = 1)	3	4	3	3	4	4
TYPE OF DWELLING*	N.A	3	3	3,4	4	3,4
PROVINCE*	A	Marit,Q,O	M,A	M,A	West	West
Education	4	4	4	3,4,5	-	1,3
Expenditures						
Dollar Levels (Highest = 1)						
Total Current Expenditures	4	4	4	4	4	5
Total Consumption	4	4	4	3	4	5
Food	6	6	6	4	4	6
Food Away From Home	4	4	4	3	4	4
Shelter	7	5	6	6	6	6
Owned Living Quarters	7	5	6	6	6	6
Rented Living Quarters	2	3	2	3	1	4
Household Operation	6	3	6	6	6	7
Clothing	5	4	4	5	5	6
Transportation	2	3	3	2	1	3
Transportation Services	9	9	9	7	7	9
Tobacco and Alcohol	4	4	3	3	6	4
Household Furniture and Equipment	5	1	3	5	4	6
Recreation	4	2	2	4	1	5
Reading and Education	5	4	3	5	5	8
In-Home Energy	8	8	8	7	8	7
Gasoline	3	3	3	1	2	3
Percentage of Total Expenditures (Highest = 1)						
Food	6	9	8	7	8	8
Food Away From Home	2	2	3	1	4	1
Shelter	9	8	9	8	7	7
Owned Living Quarters	8	8	5	7	9	7
Rented Living Quarters	3	5	3	5	3	5
Household Operation	9	5	9	8	9	9
Clothing	6	4	4	8	8	8
Transportation	1	1	2	1	1	1
Transportation Services	7	8	9	9	7	8

TABLE 5
Rank Position of Those in the Low-High Energy Expenditure Cell (Roadrunners) on Demographic and Expenditure Categories, 8 Cities Sample, 1969-1982 -Concluded -

	Roadrunners (Ranking out of 9)					
	Year					
	1969	1972	1974	1976	1978	1982
Tobacco and Alcohol	2	6	4	5	9	5
Household Furniture and Equipment	6	1	3	9	4	9
Recreation	2	1	1	6	1	2
Reading and Education	4	3	3	8	7	9
In-Home Energy	9	9	9	9	9	9
Gasoline	1	2	1	1	1	1

Key:
* In these rows are listed the findings on which of the categories of the variable had disproportionately high levels of the group under study.

N.A. - data was not collected on this variable in that year.

Stage of Family Life Cycle
1 - Household head < 45 years of age, no children
2 - Household head < 45 years of age, 1 or more children < 5 years of age
3 - Household head 45-64, 1 or more children < 16 years of age
4 - Household head 45-64, all children 16 or more years of age
5 - Household head 65 years of age or older
6 - Unattached individual < 45 years of age
7 - Unattached individual 45-64 years of age
8 - Unattached individual 65 years of age or older

Type of Dwelling
1 - Single detached house
2 - Semi-detached, double or single attached house
3 - Row house
4 - Duplex

Education Level Completed
1 - < Grade 9
2 - Partial secondary
3 - Complete Secondary
4 - Post-secondary (non-university) partial or complete
5 - University partial
6 - University degree or diploma

Province
N - Newfoundland
NS - Nova Scotia
NB - New Brunswick
Marit - All 3 of N, NS, NB
Q - Quebec
O - Ontario
M - Manitoba
A - Alberta
BC - British Columbia
West - All of M, A, BC

MEDIUM IN-HOME - MEDIUM TRANSPORTATION (Beavers)

It is perhaps hardest to describe this group because Beavers are the average-Canadian (Table 6). In this case, they were formed as the group with a medium range of expenditures on energy both in the home and on the road. In terms of the nine energy typology groups, the 'Beavers' rank 4th, 5th or 6th in almost all expenditure categories with occasional non-patterned variations to 7th position.

The people in this group tend to be in the middle stages of the family life cycle with heads 30-64 years of age and children both under 5 and over 5 living in a single family dwelling or semi-detached home. Many of them have completed a secondary school education, sometimes with some university. A disproportionately high percentage live in Ontario or British Columbia.

Changes 1969 to 1982

The changes from the middle position of this group over time tend to be unstable. Between 1976 and 1978, when energy prices increased so dramatically, the 'Beavers' dropped in their relative position on expenditures for food eaten outside the home. This drop in the more discretionary (and often travel-related) expenditures for food was even more pronounced in 1982 as a percentage of total expenditures. They also reported declines in the area of clothing. However, relative increases were noted in household operation as a percent of expenditures and household furnishings, reading and education and transportation services.

The average income of this group increased from $9,785 in 1969 to $38,564 in 1982 or by 294%, slightly above the overall average of 276%. Their in-home energy expenditures increased by 306% less than the average rate, from $291 to $1,182, but their gasoline expenditures went up 577% from $141 to $955. This is well above the overall average increase of 368%. The 'Beavers' appear to have been hit much harder by increases in costs of fuel for their cars than fuel for their homes. The rankings of Beavers on energy expenditures suggest

TABLE 6
Rank Position of Those in the Medium-Medium Energy Expenditure Cell (Beavers) on Demographic and Expenditure Categories, 8 Cities Sample, 1969-1982

	Beavers (Ranking out of 9)					
	Year					
	1969	1972	1974	1976	1978	1982
INCOME (HIGHEST = 1)	5	5	5	5	6	6
AGE OF HEAD (YOUNGEST = 1)	5	5	3	4	5	4
FAMILY SIZE (SMALLEST = 1)	5	6	6	5	5	5
STAGE OF FAMILY LIFE CYCLE*	3,4	4,9	3,4	2,3	2,3,4	2,3,4,6
NUMBER OF ROOMS (LOWEST = 1)	5	5	6	5	8	5
TYPE OF DWELLING*	N.A.	2	2	1	1,2	1,2
PROVINCE*	BC	O	BC,O	BC,NS	BC	O,M
Education	3	3	-	4,6	4,6	3,6
Expenditures						
Dollar Levels (Highest = 1)						
Total Current Expenditures	5	5	5	5	6	6
Total Consumption	6	5	5	5	6	6
Food	5	4	5	6	6	5
Food Away From Home	6	5	5	5	6	5
Shelter	5	6	5	5	5	4
Owned Living Quarters	5	6	5	4	5	4
Rented Living Quarters	7	4	6	7	7	6
Household Operation	5	6	5	5	5	5
Clothing	6	6	6	6	6	4
Transportation	6	5	4	4	5	5
Transportation Services	7	5	4	5	3	6
Tobacco and Alcohol	5	5	6	5	5	5
Household Furniture and Equipment	6	5	7	7	5	5
Recreation	5	5	5	6	5	6
Reading and Education	6	5	5	6	4	4
In-Home Energy	6	6	5	5	6	5
Gasoline	4	4	5	5	4	4
Percentage of Total Expenditures (Highest = 1)						
Food	5	4	5	5	5	4
Food Away From Home	7	4	5	4	5	7
Shelter	6	5	5	5	5	6
Owned Living Quarters	5	5	3	4	4	4
Rented Living Quarters	7	6	6	6	7	6
Household Operation	7	8	7	5	4	6
Clothing	4	7	7	4	6	5
Transportation	5	5	5	5	5	5
Transportation Services	6	5	4	5	6	6

TABLE 6

Rank Position of Those in the Medium-Medium Energy Expenditure Cell (Beavers) on Demographic and Expenditure Categories, 8 Cities Sample, 1969-1982 -Concluded -

	Beavers (Ranking out of 9)					
	Year					
	1969	1972	1974	1976	1978	1982
Tobacco and Alcohol	5	4	7	8	7	1
Household Furniture and Equipment	7	6	7	5	1	5
Recreation	4	6	5	5	5	6
Reading and Education	8	7	4	5	4	7
In-Home Energy	5	5	6	6	6	6
Gasoline	5	5	5	5	5	5

Key:

* In these rows are listed the findings on which of the categories of the variable had disproportionately high levels of the group under study.

N.A. - data was not collected on this variable in that year.

Stage of Family Life Cycle
1 - Household head < 45 years of age, no children
2 - Household head < 45 years of age, 1 or more children < 5 years of age
3 - Household head 45-64, 1 or more children < 16 years of age
4 - Household head 45-64, all children 16 or more years of age
5 - Household head 65 years of age or older
6 - Unattached individual < 45 years of age
7 - Unattached individual 45-64 years of age
8 - Unattached individual 65 years of age or older

Type of Dwelling
1 - Single detached house
2 - Semi-detached, double or single attached house
3 - Row house
4 - Duplex

Education Level Completed
1 - < Grade 9
2 - Partial secondary
3 - Complete Secondary
4 - Post-secondary (non-university) partial or complete
5 - University partial
6 - University degree or diploma

Province
N - Newfoundland
NS - Nova Scotia
NB - New Brunswick
Marit - All 3 of N, NS, NB
Q - Quebec
O - Ontario
M - Manitoba
A - Alberta
BC - British Columbia
West - All of M, A, BC

this also. Efforts to curtail heating costs may have taken priority in this period over efforts to curtail gasoline expenditures. (See insulation section later.)

There are some trends to note in the household characteristics of Beavers. In terms of age of head, there tends to be relatively fewer young people in this group in 1982 than earlier and more in the middle years and over 65 years of age. Also the education level of this group is changing, with increases in the percentage who have not attended university, perhaps among the older group, but at the same time increases in those who have completed it.

HIGH IN-HOME - LOW TRANSPORTATION (Bears)

As their name implies, the Bears (Table 7) seem to want to be very comfortable in their homes. They have larger than average homes, although they may not be single family dwellings. They spend a great deal on shelter, though not as much as Hippos, but have the highest percentage of expenditures in this category. Much of these expenditures are for owned living quarters but relatively speaking increasing amounts over the years are going for rented quarters. Their homes are more likely than average to be in the Maritime provinces or Ontario. Household operation as a dollar value and especially as a percentage of income are also high. Furniture and equipment expenditures were highly variable but in 1982 they spent more than anyone else and as a percentage of expenditures, the greatest amount in 1978 and 1982. In many ways in housing demands they live like the 'Hippos'. However, the incomes of the Bears are well below those of the Hippos so that 'Bears' spend a much higher proportion of their incomes on these in-home expenditures.

In keeping with their home interests, expenditures on food bought away from home are low as a percent of their total budgets as are total transportation expenditures. When they do travel, they spend often on transportation services.

Changes 1969-1982

Average incomes of the Bears have increased by more than the average at 329% to $39,937 in 1982 from $9,309 in 1969. Their in-home energy costs have gone up more than average at 326% from $481 to $2,052. Although they still spend the least dollars and the lowest proportion of total expenditures on gasoline, their increase in expenditures over the 13 years has also been great. In 1969, the average expenditure on gasoline was $1.45. Over all, households in this group who did report such gasoline expenditures the average was $22. By 1982, the average across everyone in the group was $120, a 8166% increase. For those with non-zero gasoline expenditures it was $266, a 1086% increase. Although the increase appears great, it is mainly attributable to the decrease in the number of non-buyers of gasoline from the 1969 level. Fewer 'Bears' in 1982 did not buy gasoline at all.

TABLE 7
Rank Position of Those in the High-Low Energy Expenditure Cell (Bears) on Demographic and Expenditure Categories, 8 Cities Sample, 1969-1982

	Bears (Ranking out of 9)					
	Year					
	1969	1972	1974	1976	1978	1982
INCOME (HIGHEST = 1)	6	6	6	6	5	5
AGE OF HEAD (YOUNGEST = 1)	7	7	7	7	7	7
FAMILY SIZE (SMALLEST = 1)	8	5	5	6	6	6
STAGE OF FAMILY LIFE CYCLE*	3,4	3,6	4	3,6,9	4,6,9	3,9
NUMBER OF ROOMS (LOWEST = 1)	7	7	7	7	6	7
TYPE OF DWELLING*	N.A.	2	4	2	2,4	2,4
PROVINCE*	N,O	N,NS,O	N,NS,O,Q	N,Q,O	Mar,O	Mar,O
Education	1	1	1	1,6	1,2,3,6	1,4
Expenditures						
Dollar Levels (Highest = 1)						
Total Current Expenditures	6	6	6	6	5	4
Total Consumption	5	6	6	6	5	4
Food	4	5	4	5	5	4
Food Away From Home	5	7	6	6	5	6
Shelter	3	3	3	3	2	3
Owned Living Quarters	3	4	4	3	2	3
Rented Living Quarters	6	6	5	5	5	3
Household Operation	3	5	4	3	2	3
Clothing	4	5	5	4	4	5
Transportation	7	7	7	7	7	7
Transportation Services	2	1	2	2	2	3
Tobacco and Alcohol	6	7	5	6	3	6
Household Furniture and Equipment	4	7	5	2	6	1
Recreation	6	7	8	3	4	2
Reading and Education	3	8	6	4	6	5
In-Home Energy	1	2	3	3	1	1
Gasoline	9	8	9	9	7	9
Percentage of Total Expenditures (Highest = 1)						
Food	3	3	3	3	3	3
Food Away From Home	6	8	7	8	3	9
Shelter	2	3	1	3	3	1
Owned Living Quarters	2	2	1	2	2	2
Rented Living Quarters	4	4	5	4	5	3
Household Operation	1	3	1	2	1	1
Clothing	2	1	1	1	7	7
Transportation	9	7	9	9	8	9
Transportation Services	3	2	2	2	3	4

TABLE 7
Rank Position of Those in the High-Low Energy Expenditure Cell (Bears) on Demographic and Expenditure Categories, 8 Cities Sample, 1969-1982 -Concluded -

	Bears (Ranking out of 9)					
	Year					
	1969	1972	1974	1976	1978	1982
Tobacco and Alcohol	9	5	2	4	2	7
Household Furniture and Equipment	2	9	2	1	9	1
Recreation	9	8	9	2	6	4
Reading and Education	3	8	6	4	6	5
In-Home Energy	1	1	1	1	1	1
Gasoline	8	8.5	8.5	9	9	9

Key:
* In these rows are listed the findings on which of the categories of the variable had disproportionately high levels of the group under study.

N.A. - data was not collected on this variable in that year.

Stage of Family Life Cycle
1 - Household head < 45 years of age, no children
2 - Household head < 45 years of age, 1 or more children <5 years of age
3 - Household head 45-64, 1 or more children < 16 years of age
4 - Household head 45-64, all children 16 or more years of age
5 - Household head 65 years of age or older
6 - Unattached individual <45 years of age
7 - Unattached individual 45-64 years of age
8 - Unattached individual 65 years of age or older

Type of Dwelling
1 - Single detached house
2 - Semi-detached, double or single attached house
3 - Row house
4 - Duplex

Education Level Completed
1 - <Grade 9
2 - Partial secondary
3 - Complete Secondary
4 - Post-secondary (non-university) partial or complete
5 - University partial
6 - University degree or diploma

Province

N - Newfoundland	O - Ontario
NS - Nova Scotia	M - Manitoba
NB - New Brunswick	A - Alberta
Marit - All 3 of N, NS, NB	BC - British Columbia
Q - Quebec	West - All of M, A, BC

The 'Bears' group is changing in that they are relatively more likely to have mature families with older children still at home and less likely to have a high percentage of families with heads 65 years of age and older. Household furnishing expenditures are growing in importance generally, although there is much variability here. Their recreation expenditures are also increasing relatively to other groups. They used to spend a high percentage of their budgets on clothing, but in 1978 and 1982 this category was relatively low. Finally, in 1978 and 1982 they took over the top spot from 'Hippos' on in-home energy expenditures. They had not held this position since 1969 although they have always spent the largest budget proportion of any group.

HIGH IN-HOME - HIGH TRANSPORTATION (Hippos)

This is the most favoured group of all Canadian energy buyers in many ways. (See Table 8) They consistently had the highest pre-tax incomes. Relatively high proportions have a university education completed. Although their average education levels are still high, in recent periods it has been declining. In recent years they have consistently been slightly above average in age, mainly in the 45-64 age group, at the peak period of earning capacity. However, 1982 figures indicate a large relative increase in the numbers of families in this group with heads of younger ages. They are almost never over 65 years of age. They also have the largest families and these families are predominantly in the middle stages of the family life cycle, with no children under 5 and one or more over 16 still in the home. Therefore, the demands on their financial resources are greatest. There has been a slight shift to somewhat younger children in the most recent time period. These families generally live in single family houses and are relatively more likely to live in the Maritimes and Ontario and more recently in Quebec. These large houses consume a relatively large amount of money but not a relatively large share of the total budgets of these families. Other consumption areas reflect a similar pattern of relative values. Although dollar expenditures in most categories are among the highest, often ranking first, the percentage of total budgets expended on each category is relatively low. This is true for total food purchases, owned living quarters especially after 1976, household operation, clothing until 1976, tobacco and alcohol, household furnishings and equipment. In some of the more discretionary categories both dollar expenditures and percentages of total current expenditures are relatively high. These include clothing since 1976, transportation, recreation, reading and education.

Changes 1969-1982

One of the more recent changes in occupants of this cell has been an increase in the number of younger families and an increase in families whose heads have less than a university education. In 1982, this group no longer

TABLE 8
Rank Position of Those in the High-High Energy Expenditure Cell (Hippos) on Demographic and Expenditure Categories, 8 Cities Sample, 1969-1982

	Hippos (Ranking out of 9)					
	Year					
	1969	1972	1974	1976	1978	1982
INCOME (HIGHEST = 1)	1	1	1	1	1	1
AGE OF HEAD (YOUNGEST = 1)	3	6	4	6	6	6
FAMILY SIZE (SMALLEST = 1)	9	9	9	9	9	9
STAGE OF FAMILY LIFE CYCLE*	3,4	4,5	4,5	6	4,5	3,4
NUMBER OF ROOMS (LOWEST = 1)	9	9	9	9	9	8
TYPE OF DWELLING*	N.A.	1	1	1	1	
PROVINCE*	Marit,O	Marit,O	Marit,O,Q	Marit,O	Marit,O	Marit,O,Q
Education	6	6	6	6	6,3	3,4
Expenditures						
Dollar Levels (Highest = 1)						
Total Current Expenditures	1	1	1	1	1	1
Total Consumption	1	1	1	1	1	1
Food	1	1	1	1	1	1
Food Away From Home	1	2	1	1	1	1
Shelter	1	2	1	1	3	2
Owned Living Quarters	1	2	1	1	3	2
Rented Living Quarters	8	8	9	8	8	9
Household Operation	1	2	1	1	1	1
Clothing	1	1	1	1	1	1
Transportation	1	1	1	1	2	1
Transportation Services	4	2	1	1	6	2
Tobacco and Alcohol	1	1	1	1	1	1
Household Furniture and Equipment	2	3	1	1	1	2
Recreation	1	3	1	1	2	1
Reading and Education	1	1	1	1	1	2
In-Home Energy	2	1	1	1	3	2
Gasoline	1	1	1	2	1	1
Percentage of Total Expenditures (Highest = 1)						
Food	9	7	9	9	9	9
Food Away From Home	4	6	2	5	1	6
Shelter	7	6	6	7	8	8
Owned Living Quarters	4	4	6	8	8	9
Rented Living Quarters	8	8	9	8	9	8
Household Operation	5	7	6	7	7	7
Clothing	7	5	6	2	1	1
Transportation	3	2	3	2	4	2
Transportation Services	9	7	5	7	9	7

TABLE 8
Rank Position of Those in the High-High Energy Expenditure Cell (Hippos) on Demographic and Expenditure Categories, 8 Cities Sample, 1969-1982 - Concluded -

	Hippos (Ranking out of 9)					
	Year					
	1969	1972	1974	1976	1978	1982
Tobacco and Alcohol	7	9	8	3	6	6
Household Furniture and Equipment	4	5	9	8	3	7
Recreation	1	5	4	3	2	1
Reading and Education	2	1	1	1	1	5
In-Home Energy	6	5.5	5	5	5	5
Gasoline	3	3	3	3	3	3

Key:

* In these rows are listed the findings on which of the categories of the variable had disproportionately high levels of the group under study.

N.A. - data wasnot collected on this variable in that year.

Stage of Family Life Cycle
1 - Household head < 45 years of age, no children
2 - Household head < 45 years of age, 1 or more children < 5 years of age
3 - Household head 45-64, 1 or more children < 16 years of age
4 - Household head 45-64, all children 16 or more years of age
5 - Household head 65 years of age or older
6 - Unattached individual < 45 years of age
7 - Unattached individual 45-64 years of age
8 - Unattached individual 65 years of age or older

Type of Dwelling
1 - Single detached house
2 - Semi-detached, double or single attached house
3 - Row house
4 - Duplex

Education Level Completed
1 - < Grade 9
2 - Partial secondary
3 - Complete Secondary
4 - Post-secondary (non-university) partial or complete
5 - University partial
6 - University degree or diploma

Province
N - Newfoundland
NS - Nova Scotia
NB - New Brunswick
Marit - All 3 of N, NS, NB
Q - Quebec
O - Ontario
M - Manitoba
A - Alberta
BC - British Columbia
West - All of M, A, BC

lived in the largest homes for the first time, nor since 1976 have they had the highest expenditures on shelter and owned living quarters. However, this group is even less likely than in earlier periods to be burdened with rent payments. Over time they have dramatically increased their clothing expenditures relative to other groups. Although transportation and transportation services have been generally declining for this group, there was a turnaround reflected first in the 1978 data.

After a drop in position from 1969 to 1972 in recreation as a percentage of expenditures, the 'Hippos' have regained their position as highest spenders. However, they have declined in reading and education. In 1978, the 'Hippos' gave up top position for in-home energy expenditures to the 'Bears' and have not regained it, but they hold on to the highest gasoline expenditures, surpassing even the 'Roadrunners'. However, the latter, living frequently in the West where gasoline prices are lower, may drive further than the Hippos. The average income of the 'Hippos' has exactly kept pace with the overall average increasing 276% between 1969 and 1982 from $15,306 to $57,579, while gasoline expenditures increased well above the average at 484% from $438 to $2,557 and in-home energy expenditures increased slightly more than average at 330% from $464 to $1,995.

CONSERVATION ACTIVITY

As discussed in the previous sections there is some evidence of changes in consumption levels in a relative sense. For example, there has been some relative movement upwards in the typology by the elderly and some relative movement downward by those with high education levels. Also, there have been some changes in the distribution of Canadians across the typology cells seen in Table 3, although most of these occurred before the major price increases of the last four survey years. In this section, further evidence of conservation activity is sought through a more in-depth analysis of energy costs and through examination of home insulation expenditures for the 1976 and 1978 periods when this information was collected.

Table 9 presents information in aid of this analysis. The data presented here attempts to control on the factors which have the most effect on energy consumption but yet are largely uncontrollable, especially in the short-run. These factors are the number of people in the household, the number of rooms in the dwelling and the climatic conditions. By looking at the energy expenditures on a per room, per room per degree day and per capita basis then, we can better see how households might have moved to constrain energy use during the period of rapid price increases within the real constraints they face due to where they live and the households they have.

In 1969, in the home on a per room basis those spending in the bottom quantile of in-home energy expenditures averaged around $40; those in the middle group around $52 and those in the highest group around $70. The spread is quite narrow and largely reflects the low cost of energy in that period. By 1982, those in the lowest group spent around $130/room; those in the middle group around $190, and those in the highest group around $275. The spread had grown from about $30 to about $145. Part of this larger gap in more recent years can be attributed to the larger than average increases in expenditures per room among the largest consumers. The three groups with high in-home expenditures recorded 1969-1982 percentage increases of about 385%, while those in the lowest three in-home energy expenditure groups averaged closer to 240%. The overall average increase was 266%.

TABLE 9
Energy Expenditures on a Per Room and Per Capita Basis

Energy Use Category In-Home - Transportation		Low-Low	Low-Medium	Low-High	Medium-Low	Medium-Medium	Medium-High	High-Low	High-Medium	High-High	ALL
		Churchmice		Roadrunners		Beavers		Bears		Hippos	
IN-HOME	Year										
$/room	1969	40	39	36	55	52	52	76	68	69	53
	1972	43	41	38	65	59	57	84	77	77	60
	1974	50	49	46	75	70	69	106	103	102	73
	1976	73	65	68	100	93	95	134	132	137	98
	1978	87	82	78	125	115	115	174	166	161	121
	1982	135	129	127	202	184	182	295	261	271	194
% Change 1969-1982		237.5	230.8	252.8	267.3	253.8	250.0	288.2	283.8	292.8	266.0
$/room/1000 d.d.	1969	8.5	8.5	7.6	12.9	12.8	12.5	17.8	17.0	16.8	12.6
	1972	9.4	8.8	8.3	15.4	14.4	13.9	20.2	19.1	19.5	14.3
	1974	11.6	10.6	10.3	18.5	17.5	17.1	25.6	25.3	24.8	17.8
	1976	17.1	14.9	15.8	23.9	22.5	23.8	31.3	31.5	32.7	23.4
	1978	19.2	19.3	19.3	29.7	27.5	26.5	42.0	40.4	38.2	28.7
	1982	32.1	30.8	31.8	48.1	43.7	42.7	71.4	61.2	64.4	46.2
% Change 1969-1982		277.6	262.4	318.4	272.8	241.4	241.6	301.1	260.0	283.3	266.6
TRANSPORTATION											
$/capita	1969	1	51	123	1	45	112	1	39	118	69
	1972	3	85	192	5	76	168	4	65	154	80
	1974	13	109	288	10	104	225	7	101	216	113
	1976	22	170	390	15	149	323	15	134	284	160
	1978	21	192	414	16	166	337	18	156	347	178
	1982	80	391	854	67	333	714	47	344	713	375
	% Change	7900.0	666.7	594.3	6600.0	640.0	537.5	4600	782.1	504.2	443.5
	$ Change	79	340	731	66	288	602	46	305	595	306

When climatic conditions are taken into consideration, those in the lowest in-home expenditure groups had more difficulties holding the line. The average percentage increase in expenditures per room per 1000 degree days between 1969 and 1982 was 267%. Churchmice and Roadrunners were above this with 278% and 318% respectively. However, the Bears and Hippos were also quite high with 301% and 283% increases respectively. Again the average gap between the lowest and highest groups of consumers grew from about $9 to about $40.

The reasons for the above average increases probably differ between those at the top and those at the bottom. The Hippos and Bears generally have very high incomes and could likely afford to continue their high energy consumption patterns. It may be that they chose to let expenditures increase rather to strictly curtail them. However, it is likely that those at the bottom, the Churchmice and the Roadrunners, living in the smallest accommodations and in the case of the Churchmice having very restricted incomes, were constrained to doing very little to resist or prevent the increases in expenditures that accompanied price increases. Those groups in the middle seem to have been able to exercise more discretion and so were able to accomplish smaller percentage increases in per room and per room per degree day expenditures.

Per capita gasoline expenditures for transportation are difficult to analyse in terms of percentage increase. The very low average expenditures of those in the lowest gasoline consumption groups make any increases seem astronomical. If these low consumer households are ignored, the larger percentage increases were recorded by the medium level gasoline consumers in percentage terms rather than the highest consumers. This would suggest that there were some efforts to constrain growth in expenditures among those who spent the most and, therefore, had the greatest incentive to cut back. However, still in dollar terms those who used the most increased their consumption the most between 1969 and 1982. Finally, within each of the three gasoline consumption levels the highest increases were found among those who consumed the least in the home. It may be that transportation is becoming more of a priority for this group over the years. This is certainly true for many of the Churchmice who are elderly. Often the average increases reflect

an increase in the number of those driving and recording some expenditures. This is more likely to happen among the lowest groups in the typology.

Insulation

Insulation expenditures were separately identified in the Family Expenditure Survey data for only two years, 1976 and 1978. Table 10 presents the average expenditures for each typology group for each of these two years.

In 1976, the Roadrunners were fastest off the mark to invest in insulation after the first oil crisis despite their low in-home energy costs. They had the highest expenditures of the five cells previously discussed. However, all the cells above Beavers, except the Hippos, spent relatively large amounts. However, by 1978 the enthusiasm of the Roadrunners had dropped off. In 1978, the 'Beavers' had begun to hear the message to insulate. It should be noted that in 1977 the federal government introduced the Canadian Home Insulation Program (CHIP). In 1978 and 1982 they further expanded the eligibility of housing stock to which it applied. Those with homes of certain ages to which they were adding insulation could claim cash grants to help offset the costs.

The Bears with high in-home expenditures (and those with medium in-home but high gasoline expenditures) also were relatively high spenders for insulation, but Hippos less so. Recall that the average income of Bears is much lower than that of Hippos so the energy price increases would have hit their budgets harder. Although the Hippos seem to have improved their relative position in 1978, they still spent less than average amounts on insulation despite their high in-home energy costs. However, their drop from first to third place in energy costs may be attributable to some improvement in insulation purchasing. Similarly, the Beavers increased insulation may have helped them control their in-home energy expenditures per room.

Finally 'Churchmice' spent the least amount and percentage on insulation. There are likely several reasons. Firstly, they probably cannot afford

TABLE 10
Average Insulation Expenditures by Typology Cell, 8 Cities Sample, 1976 and 1978

Typology Cell			1976	1978
Expenditures on Energy In-Home	Transportation		Average Insulation Expenditures $	$
Low	Low	(Churchmice)	2.03	3.96
Low	Medium		12.96	15.12
Low	High	(Roadrunners)	15.79	7.93
Medium	Low		6.67	19.20
Medium	Medium	(Beavers)	13.27	25.21
Medium	High		15.26	24.23
High	Low	(Bears)	15.29	16.94
High	Medium		22.85	14.51
High	High	(Hippos)	4.97	16.80
	ALL		12.44	18.37

the investment and may not have the physical abilities in many cases to install the insulation themselves. Secondly, they have less to gain, given their already low energy usage. Finally, they are more likely to be renters from their expenditure patterns and, therefore, not in control of the housing capital they occupy. These low insulation expenditures would contribute to their higher than average increases in expenditures per room per degree day.

Summing Up

Those who are paying the medium or high amounts for energy seem to be making efforts to reduce consumption in the home through insulation investments (a capital investment). The transportation-related constraints they also show may be accomplished through capital investments (buying smaller cars). At the lower end, the Churchmice have been trying to hold the line on cost increases on a per room and per capita basis. However, with low ecpenditures on insulation, their cost per room per degree day are rising faster than average.

Bears are insulating but are also continuing to use large amounts of energy in their homes. Their low gasoline expenditures probably help keep their total energy bills within acceptable limits in their total budgets.

Hippos, despite high energy expenditures and with high incomes, appear more reluctant to insulate. They have experienced higher than average increases on all measures of in-home energy use.

Finally, Beavers are being good Canadians - insulating and doing better than average at holding the line on all measures in-home of consumption and keeping private transportation fuel expenditures slightly below the average.

SUMMARY AND CONCLUSIONS

The development of an expenditure-based energy typology allows for the assessment of different energy users and their different lifestyles. Those who consume large or small amounts of in-home energy are not necessarily those who consume at the same level in their cars. The various combinations indicate a range of alternatives for consumption. In some cases the alternatives may be options freely chosen; in other cases, the consumption pattern may arise from social, physical and/or economic constraints. For example, many of the Churchmice likely have low energy expenditures as the result of low incomes. However, they also have, on average, fewer family members and smaller homes. At the other end of the energy-use scale, even with large energy expenditures the Hippos are not heavily burdened with payments based on the low proportion of total budgets they spend on energy.

The additional data within the Family Expenditure Survey materials allows for the development of fairly clear profiles of the characteristics and lifestyles of the different types of energy users as outlined in the paper. This information can be used by policy-makers wishing to reach these consumers with the relevant conservation messages and incentive or support programmes. Tracking this information over time suggests where such policies as well as price increases may be impacting and indicates that some inter-cell shifts and intra-cell modifications are occurring. Of course, to be certain of these shifts longitudinal studies would be the ideal, but such research relevant to the 'energy crisis' decade is simply not available.

The most important indications of changes of those who occupy the typology cells from year to year are:

- Some movement of the most highly educated out of the Hippo cell and the relative aging of this group. The highly educated have consistently been found to be more socially conscious in attitudes. They also may have the educational backgrounds to process and apply conservation information.

- The increase in unattached individuals over 75 years of age in the 'Bear' category, possibly because of their inability to control heating costs of the large older homes they often own and also perhaps due to increases in their relative income position in recent years.

- The inclusion among Roadrunners of older households with children over 16 years of age and also of young unattached individuals.

- The increase in the later periods in proportion of Churchmice households headed by persons under 30. These young households may have experienced the worst economic hardships of the combined inflation and recession during this period. Work experience of these people is low making them more vulnerable to layoffs. Also, the growth in this group may reflect the increasing numbers of low-income female-headed single-parent households.

The large energy price increases in the last half of the 13-year period under study and especially after 1978 resulted in very large increases in expenditures for energy. However, energy expenditures had been declining as a proportion of budgets between 1969 and 1974. Since incomes rose rapidly for most people during 1970's, total budgets going to energy increased only a modest amount. Some groups did experience larger relative increases than others, however. Those already economically hard-pressed (e.g., Churchmice) had larger increases in energy budget proportions than did those at the top of incomes and expenditures. Those with limited incomes have little room for cutting back further and also few means to make the capital investments which can effectively aid such cutbacks. The result is seen in their inability to constrain in-home energy expenditures on a per room per degree day basis and in their low levels of insulation purchasing.

Those who are consuming the most (Hippos and Bears) have shown evidence of efforts to constrain energy expenditure increases through insulation purchasing. However, they show little effective overall results in terms of growth in energy use. Those who used the most also recorded the largest increases during the period in total dollars going for energy (but not percent of budgets) and in in-home energy dollars per room and per capita gasoline dollars.

Energy prices have largely stabilized again since 1982. The 'energy crisis' has lost its headline status. However, new federal-provincial pricing arrangements may lead to new rounds of large price increases. If so, the questions concerning impacts and responses will arise again. Expenditures survey information will continue to be a very valuable source of information to help answer these questions.

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APPENDIX

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982

1969

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
AVERAGE INCOME	4639	7671	10196	6706	9785	11773	9309	14098	15306	10400
AVERAGE AGE OF HEAD	55	49	43	55	48	44	49	46	45	47
AVERAGE FAMILY SIZE	2.3	3.2	3.6	3.1	3.8	3.9	4.2	4.2	4.4	3.7
STAGE OF FAMILY LIFE CYCLE with relatively high %	6,7,8,9	2,6	1,2	6,9	3,4	3,5	3,4	2,4	3,4	
TYPE OF DWELLING	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AVERAGE NUMBER OF ROOMS	4.4	5.0	5.3	5.6	5.9	6.0	6.7	7.1	7.0	5.9
AGE DISTRIBUTION BY %										
30	10.6	10.6	19.9	5.1	5.7	9.5	3.3	4.8	7.9	8.9
30-44	20.4	31.2	39.1	26.2	39.4	43.8	41.7	44.9	43.7	37.8
45-64	33.9	39.9	36.7	36.5	42.2	41.4	43.0	41.0	44.1	40.1
65 AND OVER	35.1	18.3	4.2	32.2	12.7	5.3	12.0	9.3	4.3	13.2
PROVINCE WITH RELATIVELY HIGH %	Quebec, Alberta	Quebec, Prairie	Quebec, Alberta	Quebec	Ontario, B.C.	Ont,Man B.C.	Nfld., Ontario	Ontario, B.C.	Ontario	
EDUCATION LEVEL WITH RELATIVELY HIGH %	1		4	1	2,3	2,4	1	5,6	5,6	
EXPENDITURES:										
DOLLAR										
TOTAL CURRENT EXPENDITURES	4590	7340	9974	6518	9407	11562	9301	14016	15519	10252
TOTAL CURRENT CONSUMPTION	3839	5872	7802	5361	7241	8811	7418	10280	11622	7895
FOOD	1136	1503	1765	1480	1800	1976	1940	2266	2321	1833
FOOD IN EATING PLACES	124	191	284	178	230	345	242	460	464	295
SHELTER	938	1187	1286	1338	1482	1606	1970	2254	2372	1602
OWNED LIVING QUARTERS	215	557	562	732	912	938	1141	1468	1518	905
RENTED LIVING QUARTERS	509	363	431	222	184	212	209	113	140	252
HOUSEHOLD OPERATION	189	258	301	259	333	381	438	535	664	379
CLOTHING	383	577	848	615	827	983	858	1250	1326	886
TRANSPORTATION	222	897	1624	333	894	1610	387	1222	1871	1161
TRANSPORTATION SERVICES	173	147	140	226	147	149	233	259	180	173
TOBACCO & ALCOHOLIC BEVERAGES	209	259	362	250	322	375	299	445	494	348

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Continued -

1969

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
EXPENDITURES: (continued)										
DOLLAR										
HOUSEHOLD FURNISHINGS & EQUIPMENT	195	353	409	253	372	455	436	677	664	428
RECREATION	155	208	454	185	402	502	240	495	704	415
READING & EDUCATION	64	108	151	111	137	181	202	209	278	165
IN-HOME ENERGY COSTS	164	181	179	293	291	298	481	458	464	306
GASOLINE	2	133	366	2	141	380	1	131	438	231
$ EXPENDITURES										
FOOD	27.2	21.9	18.7	24.7	20.5	18.1	23.8	18.2	16.7	20.4
FOOD IN EATING PLACES	2.1	2.5	2.9	2.1	2.3	2.9	2.4	3.0	2.8	2.6
SHELTER	25.6	17.7	13.8	24.1	17.1	14.7	24.1	17.9	16.5	18.1
OWNED LIVING QUARTERS	5.7	7.9	5.7	12.8	10.2	8.3	12.0	11.4	10.3	9.1
RENTED LIVING QUARTERS	13.7	5.5	5.0	3.6	2.2	2.2	3.8	1.1	1.4	3.8
HOUSEHOLD OPERATION	4.6	3.8	3.1	4.5	3.7	3.4	4.7	4.0	3.8	3.8
CLOTHING	7.3	7.2	8.3	8.5	8.4	8.3	9.0	9.2	8.3	8.3
TRANSPORTATION	4.1	11.8	15.6	4.6	9.8	13.7	3.5	8.9	12.6	10.4
TRANSPORTATION SERVICES	3.3	2.0	1.3	3.5	1.6	1.2	2.7	1.7	1.1	1.9
TOBACCO & ALCOHOLIC BEVERAGES	3.9	3.7	3.8	3.6	3.4	3.3	3.3	3.3	3.4	3.5
HOUSEHOLD FURNISHINGS & EQUIPMENT	3.6	4.3	3.9	3.6	3.7	3.9	4.3	4.2	4.1	3.9
RECREATION	2.6	2.6	4.2	2.5	3.8	4.1	2.3	3.3	4.4	3.6
READING & EDUCATION	1.2	1.4	1.5	1.5	1.4	1.5	2.0	1.5	2	1.5
IN-HOME ENERGY COSTS	3.6	2.5	1.8	4.5	3.1	2.6	5.2	3.3	3.0	3.0
GASOLINE	.0	1.8	3.7	.0	1.5	3.3	.0	0.9	2.8	2.3

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Continued -

1972

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
AVERAGE INCOME	5636	11329	13940	8512	12738	17181	11677	17195	18665	13001
AVERAGE AGE OF HEAD	57	44	41	57	46	45	52	44	48	48
AVERAGE FAMILY SIZE	2.4	3.3	3.6	3.1	3.7	4.2	3.6	4.1	4.7	3.6
STAGE OF FAMILY LIFE CYCLE with relatively high %	6,8,9	1,2,5	1,3	6	4,9	3,4,5	3,6	3,4	4,5	
TYPE OF DWELLING	3,4	4	3	2	2	1	2	1	1	
AVERAGE NUMBER OF ROOMS	4.9	5.4	5.8	5.6	6.1	6.5	6.7	7.0	7.3	6.1
AGE DISTRIBUTION BY %										
30	7.6	17.8	14.6	0.9	9.8	5.5	4.1	8.9	3.1	8.3
30-44	23.2	34.4	50.0	23.5	38.2	44.2	38.5	46.4	34.7	36.9
45-64	26.7	38.5	34.4	37.3	42.9	45.9	31.8	37.2	56.2	39.9
65 AND OVER	42.6	9.4	1.0	38.3	9.1	4.5	25.6	7.5	6.0	14.8
PROVINCE WITH RELATIVELY HIGH %	Quebec, Prairie	Prairie	Prairie, B.C.	Quebec, Ontario	Ontario	Ontario	Maritimes Ontario	Maritimes Ontario	Maritimes Ont.,B.C.	
EDUCATION LEVEL WITH RELATIVELY HIGH %	1	4,5	4	1,2	3	2,3	1	5,6	6	
EXPENDITURES:										
DOLLAR										
TOTAL CURRENT EXPENDITURES	5406	10775	14330	7785	11975	16495	10998	16855	19001	12509
TOTAL CURRENT CONSUMPTION	4465	8158	10966	6169	8986	11997	8199	12237	13959	9355
FOOD	1291	1876	2011	1714	2159	2464	2079	2589	2894	2131
FOOD IN EATING PLACES	139	318	429	221	344	462	296	542	470	359
SHELTER	1085	1529	1802	1524	1801	1978	2183	2788	2689	1902
OWNED LIVING QUARTERS	437	728	1175	875	1110	1348	1340	1898	1776	1169
RENTED LIVING QUARTERS	373	476	253	197	217	103	172	165	134	231
HOUSEHOLD OPERATION	213	354	515	312	384	500	456	638	601	428
CLOTHING	475	841	1116	648	924	1334	952	1286	1412	985
TRANSPORTATION	279	1357	2303	328	1363	2407	569	1700	2806	1427
TRANSPORTATION SERVICES	145	157	123	193	170	164	268	232	237	183
TOBACCO & ALCOHOLIC BEVERAGES	249	427	509	360	441	544	388	517	569	445

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Continued -

1972

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
EXPENDITURES: (continued)										
DOLLAR										
HOUSEHOLD FURNISHINGS & EQUIPMENT	228	491	799	330	501	751	475	732	739	546
RECREATION	173	472	826	282	498	829	348	713	773	537
READING & EDUCATION	77	119	208	114	154	214	113	292	375	179
IN-HOME ENERGY COSTS	204	212	204	346	343	356	526	520	543	357
GASOLINE	8	228	592	13	237	610	12	235	631	269
$ EXPENDITURES										
FOOD	26.6	18.5	14.9	24.1	19.0	15.7	22.6	16.9	16.7	19.4
FOOD IN EATING PLACES	2.2	2.8	2.9	2.3	2.7	2.7	2.3	3.0	2.5	2.6
SHELTER	24.0	15.1	13.3	23.6	15.8	12.8	23.1	17.8	15.3	17.4
OWNED LIVING QUARTERS	9.2	7.0	8.1	13.1	9.6	8.5	12.5	11.6	10.0	9.9
RENTED LIVING QUARTERS	8.1	4.8	2.2	2.9	1.8	0.8	2.5	1.2	0.9	2.6
HOUSEHOLD OPERATION	4.5	3.4	3.5	4.6	3.3	3.1	4.3	3.6	3.3	3.6
CLOTHING	7.4	7.7	7.6	7.3	7.5	7.9	8.3	7.6	7.6	7.6
TRANSPORTATION	4.5	12.4	15.6	3.9	10.9	14.4	5.0	10.8	14.5	10.3
TRANSPORTATION SERVICES	2.8	1.5	0.9	2.3	1.4	0.9	2.5	1.3	1.2	1.6
TOBACCO & ALCOHOLIC BEVERAGES	4.4	4.0	3.7	4.5	3.9	3.4	3.8	3.4	3.2	3.8
HOUSEHOLD FURNISHINGS & EQUIPMENT	3.7	4.3	5.4	3.6	3.9	4.4	3.4	4.2	4.2	4.1
RECREATION	2.4	4.2	5.5	3.4	3.9	4.7	3.1	4.2	4.0	3.9
READING & EDUCATION	1.3	1.0	1.3	1.3	1.2	1.3	1.0	1.7	1.9	1.3
IN-HOME ENERGY COSTS	3.8	2.0	1.4	4.4	2.9	2.2	4.8	3.1	2.9	2.9
GASOLINE	0.1	2.1	3.6	0.2	2.0	3.7	0.1	1.4	3.3	2.2

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Continued -

1974

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
AVERAGE INCOME	8727	14477	18899	12423	17285	21275	16367	22788	26246	17493
AVERAGE AGE OF HEAD	56	46	42	54	45	45	48	47	46	47
AVERAGE FAMILY SIZE	2.5	3.4	3.4	3.0	3.7	4.0	3.7	3.9	4.4	3.6
STAGE OF FAMILY LIFE CYCLE with relatively high %	6,8,9	1,2	1,3	6,8,9	3,4	5	4,8,9	3,4	4,5	
TYPE OF DWELLING	4	3	3	2,4	2	1	4	1	1	
AVERAGE NUMBER OF ROOMS	5.2	5.6	5.9	6.0	6.6	6.5	6.7	7.1	7.4	6.4
AGE DISTRIBUTION BY %										
30	9.5	13.2	16.7	3.6	7.0	8.7	7.0	3.3	4.3	7.6
30-44	21.0	39.4	41.7	28.4	46.1	35.9	39.3	43.1	36.3	38.1
45-64	26.9	32.9	37.5	38.9	39.0	53.1	40.2	44.8	57.8	41.2
65 AND OVER	42.5	14.5	4.1	29.1	7.9	2.2	13.5	8.9	1.6	13.1
PROVINCE WITH RELATIVELY HIGH %	Prairie	Prairie	Prairie	Quebec, Ontario	Ontario, B.C.	Ontario	Nfld., Que. Ont.	Quebec, Ontario	Nfld., Que. Ont.	
EDUCATION LEVEL WITH RELATIVELY HIGH %	1		2,3,4	1		3,4	1	3,6	5,6	
EXPENDITURES:										
DOLLAR										
TOTAL CURRENT EXPENDITURES	7921	13949	18150	11496	16100	20471	14941	21434	25599	16530
TOTAL CURRENT CONSUMPTION	6328	10456	13220	8613	11904	14936	11188	14390	17692	12007
FOOD	1853	2470	2649	2347	2862	3218	3073	3257	3628	2819
FOOD IN EATING PLACES	217	415	529	345	474	641	459	633	797	496
SHELTER	1447	1888	2131	2003	2479	2549	2744	3159	3473	2424
OWNED LIVING QUARTERS	710	1127	1315	1126	1697	1739	1682	2002	2227	1539
RENTED LIVING QUARTERS	415	336	372	339	178	150	227	142	115	235
HOUSEHOLD OPERATION	312	467	535	484	556	619	584	782	840	572
CLOTHING	589	1002	1333	867	1147	1475	1239	1541	1720	1193
TRANSPORTATION	525	1772	2745	601	1867	3173	723	1863	3360	1854
TRANSPORTATION SERVICES	201	173	161	256	266	254	296	288	362	253
TOBACCO & ALCOHOLIC BEVERAGES	298	458	585	376	464	621	510	575	727	500

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Continued -

1974

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
EXPENDITURES: (continued)										
DOLLAR										
HOUSEHOLD FURNISHINGS & EQUIPMENT	380	734	893	570	714	914	794	869	952	745
RECREATION	346	716	1049	496	716	1037	433	829	1251	755
READING & EDUCATION	105	164	282	137	205	218	189	368	435	224
IN-HOME ENERGY COSTS	246	256	255	425	427	434	685	697	724	451
GASOLINE	28	306	797	25	326	797	25	340	837	369
$ EXPENDITURES										
FOOD	26.9	19.3	15.6	23.9	18.8	16.5	22.8	17.1	15.5	19.5
FOOD IN EATING PLACES	2.2	2.8	2.8	2.5	2.8	3.0	2.6	2.7	2.9	2.7
SHELTER	20.9	14.3	12.6	20.7	16.2	13.0	21.5	16.9	14.3	16.5
OWNED LIVING QUARTERS	9.5	8.1	7.3	11.2	10.8	8.7	12.3	10.5	9.1	9.9
RENTED LIVING QUARTERS	6.0	2.6	2.7	3.2	1.2	0.9	1.8	1.0	0.5	2.0
HOUSEHOLD OPERATION	4.4	3.5	2.9	4.4	3.5	3.2	4.5	3.7	3.5	3.7
CLOTHING	6.9	6.9	7.2	7.3	7.0	7.1	8.0	7.3	7.0	7.1
TRANSPORTATION	6.0	12.4	15.4	5.0	11.6	15.5	4.7	9.6	13.6	10.7
TRANSPORTATION SERVICES	2.7	1.2	0.8	2.3	1.6	1.2	2.3	1.3	1.4	1.6
TOBACCO & ALCOHOLIC BEVERAGES	3.7	3.3	3.3	3.2	3.0	3.0	3.6	2.8	2.9	3.1
HOUSEHOLD FURNISHINGS & EQUIPMENT	4.3	5.1	4.7	4.6	4.3	4.4	4.8	3.9	3.9	4.4
RECREATION	3.8	4.9	5.0	4.0	4.2	4.7	2.9	3.5	4.3	4.2
READING & EDUCATION	1.2	1.2	1.5	1.0	1.3	1.1	1.1	1.6	1.7	1.3
IN-HOME ENERGY COSTS	3.1	1.8	1.4	3.7	2.7	2.1	4.6	3.3	2.8	2.7
GASOLINE	0.4	2.2	4.4	0.2	2.0	3.9	0.2	1.6	3.3	2.2

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Continued -

1976

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
AVERAGE INCOME	11623	19812	25624	15435	22519	27164	21069	26973	32377	22358
AVERAGE AGE OF HEAD	56	44	43	54	45	45	51	45	46	47
AVERAGE FAMILY SIZE	2.3	3.1	3.5	2.9	3.5	3.9	3.5	4.0	4.4	3.5
STAGE OF FAMILY LIFE CYCLE with relatively high %	6,7,8,9	1,2,7	1,2	6,9	3	3,5	3,6,9	2,3,4	4	
TYPE OF DWELLING	2,3,4	3,4	3,4	3	1	1	2	1	1	
AVERAGE NUMBER OF ROOMS	5.3	5.9	6.0	6.1	6.5	6.5	6.8	7.3	7.5	6.4
AGE DISTRIBUTION BY %										
30	10.2	17.9	13.9	5.6	8.0	9.5	2.4	5.4	4.0	8.7
30-44	16.6	35.2	44.2	28.6	42.7	40.4	38.9	47.2	38.2	37.5
45-64	36.2	38.4	35.4	36.1	41.7	45.3	36.7	39.8	53.9	40.9
65 AND OVER	37.0	8.5	6.5	29.7	7.6	4.8	22.0	7.6	3.9	12.9
PROVINCE WITH RELATIVELY HIGH %	Quebec, Prairie	Prairie	Alberta	Ontario	B.C.	Ontario, B.C.	Nfld., Que. Ont.	Maritimes Ontario	Nfld., Ontario	
EDUCATION LEVEL WITH RELATIVELY HIGH %	1,2	3	2	1,3	4	3	1,6	6	6	
EXPENDITURES:										
DOLLAR										
TOTAL CURRENT EXPENDITURES	10654	18519	24119	14110	21262	25840	20481	25433	31836	21152
TOTAL CURRENT CONSUMPTION	8101	13488	17494	10490	15317	18727	14988	17423	23393	15291
FOOD	2194	2895	3563	2632	3316	3887	3335	3736	4371	3303
FOOD IN EATING PLACES	364	540	817	418	640	847	627	722	953	646
SHELTER	1946	2721	3108	2779	3294	3339	3760	4025	4338	3230
OWNED LIVING QUARTERS	1079	1655	2041	1838	2269	2192	2351	2592	2704	2091
RENTED LIVING QUARTERS	380	560	366	209	209	244	234	148	204	273
HOUSEHOLD OPERATION	437	589	701	563	743	794	853	1017	1131	749
CLOTHING	816	1269	1587	935	1560	1933	1654	1803	2584	1550
TRANSPORTATION	584	2431	4126	837	2461	3863	861	2437	4952	2468
TRANSPORTATION SERVICES	238	317	246	238	305	265	360	316	396	296
TOBACCO & ALCOHOLIC BEVERAGES	337	511	690	442	593	744	573	670	964	603

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Continued -

1976

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
EXPENDITURES: (continued)										
DOLLAR										
HOUSEHOLD FURNISHINGS & EQUIPMENT	594	933	1001	711	922	1078	1253	1065	1284	955
RECREATION	387	915	1084	558	945	1370	1140	1032	1509	973
READING & EDUCATION	136	214	278	139	259	322	297	310	502	265
IN-HOME ENERGY COSTS	366	363	387	575	576	584	878	921	978	610
GASOLINE	43	432	1164	40	447	1075	34	456	1100	506
$ EXPENDITURES										
FOOD	24.0	16.9	16.2	21.6	16.6	15.6	19.5	16.3	14.7	17.7
FOOD IN EATING PLACES	3.1	2.8	3.3	2.5	2.9	3.2	2.7	2.7	2.9	2.9
SHELTER	22.4	15.6	14.0	22.8	16.3	13.5	22.3	17.2	14.5	17.3
OWNED LIVING QUARTERS	11.6	9.2	9.1	13.3	10.9	8.7	12.4	10.7	8.9	10.6
RENTED LIVING QUARTERS	4.1	3.2	1.6	2.1	1.1	1.0	1.8	0.7	0.8	1.7
HOUSEHOLD OPERATION	4.9	3.4	3.3	4.5	3.7	3.1	4.7	4.1	3.4	3.8
CLOTHING	7.1	6.6	6.3	6.2	7.2	7.3	8.0	7.1	7.8	7.1
TRANSPORTATION	5.3	13.2	16.9	5.8	11.5	15.0	4.5	10.0	15.3	11.0
TRANSPORTATION SERVICES	2.3	1.5	0.9	1.9	1.4	1.0	2.0	1.2	1.1	1.5
TOBACCO & ALCOHOLIC BEVERAGES	3.4	2.9	3.1	3.4	2.9	2.9	3.2	2.9	3.3	3.0
HOUSEHOLD FURNISHINGS & EQUIPMENT	4.9	4.6	3.8	4.3	4.3	4.0	5.5	4.0	3.9	4.3
RECREATION	3.3	4.5	4.0	3.7	4.5	5.0	4.8	4.0	4.6	4.3
READING & EDUCATION	1.2	1.1	1.1	1.0	1.1	1.2	1.2	1.1	1.5	1.2
IN-HOME ENERGY COSTS	3.4	2.0	1.6	4.1	2.7	2.3	4.3	3.6	3.1	2.9
GASOLINE	0.4	2.3	4.8	0.3	2.1	4.2	0.2	1.8	3.5	2.4

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Continued -

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
	1978									
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
AVERAGE INCOME	13981	21720	26895	18826	25917	30475	26297	30430	35851	25566
AVERAGE AGE OF HEAD	54	45	42	54	47	44	52	47	46	48
AVERAGE FAMILY SIZE	2.5	3.0	3.3	2.9	3.5	3.8	3.4	3.6	4.0	3.4
STAGE OF FAMILY LIFE CYCLE with relatively high %	6,7,8,9	1,2	1,2	6,9		1,3,4	4,6,9	5	4	
TYPE OF DWELLING	3	3,4	4	3,4	1,2	1,2	1,2,4	1	1	
AVERAGE NUMBER OF ROOMS	5.3	5.9	6.2	6.2	7.5	6.7	7.1	7.2	8.3	6.8
AGE DISTRIBUTION BY %										
30	12.1	15.6	16.1	4.5	8.5	7.1	5.7	4.7	3.2	8.4
30-44	26.3	38.8	43.6	31.3	40.2	48.3	28.6	40.9	37.9	38.2
45-64	25.6	35.8	35.4	31.1	40.4	40.2	42.2	43.7	55.5	39.1
65 AND OVER	36.0	9.8	4.9	33.1	10.9	4.4	23.4	10.7	3.4	14.3
PROVINCE WITH RELATIVELY HIGH %	Quebec, Prairie	Prairie, B.C.	Alberta, B.C.	Quebec, Ontario	Ontario	Quebec, Manitoba	Maritimes Ontario	Maritimes Ontario	Maritimes Ontario	
EDUCATION LEVEL WITH RELATIVELY HIGH %	1	2	3,4,6	1,5	4	2,6	2,3,6	4,5,6	3,6	
EXPENDITURES:										
DOLLAR										
TOTAL CURRENT EXPENDITURES	11971	19904	26577	17091	24178	29023	24430	28534	34819	23922
TOTAL CURRENT CONSUMPTION	9609	14799	20061	12823	17806	21262	18061	20510	25157	17642
FOOD	2530	3159	4142	3134	4005	4527	4097	4387	5238	3900
FOOD IN EATING PLACES	322	588	904	517	787	1022	867	914	1289	789
SHELTER	2470	3244	3771	3337	3915	4011	4982	5132	4799	3917
OWNED LIVING QUARTERS	1376	1912	2281	2132	2659	2792	3041	3166	2997	2505
RENTED LIVING QUARTERS	563	585	741	259	234	114	299	341	133	320
HOUSEHOLD OPERATION	490	720	817	661	914	938	1052	1022	1268	875
CLOTHING	921	1240	1726	1254	1639	2086	1775	1969	2663	1676
TRANSPORTATION	898	2617	4428	1267	2784	4171	1299	3174	4416	2769
TRANSPORTATION SERVICES	271	320	279	313	347	265	378	521	302	337
TOBACCO & ALCOHOLIC BEVERAGES	418	539	613	488	661	846	794	701	975	667

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Continued -

1978

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
EXPENDITURES: (continued)										
DOLLAR										
HOUSEHOLD FURNISHINGS & EQUIPMENT	565	845	1075	710	1056	1300	925	1124	1360	1007
RECREATION	514	1025	1944	784	1139	1489	1163	1114	1867	1170
READING & EDUCATION	133	244	338	191	341	365	303	400	573	322
IN-HOME ENERGY COSTS	433	462	461	731	729	736	1172	1143	1129	765
GASOLINE	46	476	1190	46	505	1173	53	489	1264	560
% EXPENDITURES										
FOOD	24.6	17.6	16.0	21.7	17.6	16.2	20.1	17.0	15.7	18.3
FOOD IN EATING PLACES	2.0	2.9	3.2	2.3	3.1	3.4	3.2	2.9	3.5	3.0
SHELTER	24.5	16.9	14.9	23.6	17.4	14.6	23.0	19.1	14.8	18.5
OWNED LIVING QUARTERS	12.1	9.9	8.9	13.5	11.5	10.2	12.7	11.4	9.2	11.2
RENTED LIVING QUARTERS	5.3	3.0	2.9	2.3	1.1	0.4	1.7	1.2	0.4	1.8
HOUSEHOLD OPERATION	4.9	3.7	3.2	4.6	4.0	3.3	5.1	3.7	3.6	4.0
CLOTHING	6.7	6.0	6.3	6.9	6.7	6.9	6.5	6.8	7.3	6.7
TRANSPORTATION	6.7	13.3	16.6	5.6	11.4	14.2	5.8	10.9	13.3	11.0
TRANSPORTATION SERVICES	2.3	1.7	1.1	1.8	1.4	0.9	1.7	1.7	0.9	1.5
TOBACCO & ALCOHOLIC BEVERAGES	3.6	2.9	2.4	2.9	2.8	3.0	3.3	2.5	2.8	2.9
HOUSEHOLD FURNISHINGS & EQUIPMENT	4.0	4.0	4.0	4.0	4.3	4.2	3.4	3.7	4.0	4.0
RECREATION	4.0	5.0	7.4	3.6	4.5	4.9	4.0	3.8	5.2	4.5
READING & EDUCATION	1.3	1.2	1.2	1.1	1.3	1.2	1.2	1.5	1.5	1.3
IN-HOME ENERGY COSTS	3.6	2.3	1.7	4.3	3.0	2.5	4.8	4.0	3.2	3.2
GASOLINE	0.4	2.4	4.5	0.3	2.1	4.0	0.2	1.7	3.6	2.3

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Continued -

1982

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
AVERAGE INCOME	20566	33114	39547	29814	38564	43540	39938	51067	57519	39103
AVERAGE AGE OF HEAD	54.3	43.0	43.1	53.5	45.4	44.6	49.7	47.4	46.9	47.2
AVERAGE FAMILY SIZE	2.0	2	2.9	2.6	3.3	3.5	3.3	3.5	4.0	3.1
STAGE OF FAMILY LIFE CYCLE with relatively high %	6,7,8,9	1,7	1,5,7	6,7,8,9	2,3	2,5	3,9	4.5	3,5	
TYPE OF DWELLING	3,4	3,4	3,4	-	-	1	2,4	1	1	
AVERAGE NUMBER OF ROOMS	5.3	6.1	6.3	6.2	6.7	7.0	7.4	7.6	7.5	6.7
AGE DISTRIBUTION BY %										
30	15.7	14.2	14.6	7.2	7.8	11.2	4.1	4.0	5.2	9.1
30-44	20.4	48.2	42.4	22.5	45.5	37.1	41.7	39.9	36.5	38.3
45-64	25.2	29.4	38.0	45.2	38.2	47.7	34.2	48.5	55.5	40.4
65 AND OVER	38.8	8.2	5.1	25.1	8.5	3.9	20.1	7.6	2.9	12.2
PROVINCE WITH RELATIVELY HIGH %	Prairie, B.C.	Prairie, B.C.	Manitoba, B.C.	Ontario	Ontario	Quebec	Maritimes Ontario	Nfld., Ontario	Nfld., Que. Ont.	
EDUCATION LEVEL WITH RELATIVELY HIGH %	1	4	1,3	1,2	6	1,2	1,4	4,6	3	
EXPENDITURES:										
DOLLAR										
TOTAL CURRENT EXPENDITURES	17501	30187	36586	26384	35323	40849	37986	45602	54729	35823
TOTAL CURRENT CONSUMPTION	13142	21664	26224	18789	25127	29470	26989	31333	38102	25429
FOOD	3006	4354	4917	4372	5115	6085	5250	6003	6989	5137
FOOD IN EATING PLACES	644	1098	1315	981	1121	1523	1004	1576	1757	1221
SHELTER	3715	5269	5556	5070	6197	5963	7447	7990	7772	6087
OWNED LIVING QUARTERS	1704	3396	3827	2915	4106	3950	4186	5009	4597	3794
RENTED LIVING QUARTERS	1068	780	644	612	433	307	696	320	302	533
HOUSEHOLD OPERATION	765	1225	1254	1276	1440	1455	1952	1965	2077	1472
CLOTHING	947	1736	1975	1676	2140	2477	2128	2953	3270	2159
TRANSPORTATION	1493	3525	6105	1697	3909	6183	2520	4444	7967	4099
TRANSPORTATION SERVICES	454	520	333	489	467	396	553	680	595	501
TOBACCO & ALCOHOLIC BEVERAGES	496	784	975	712	948	1174	882	1145	1400	949

CHARACTERISTICS OF ENERGY USER CATEGORIES BY LEVEL OF EXPENDITURES
ON IN-HOME AND GASOLINE EXPENDITURES, 8 CITIES - 1969 - 1982
- Concluded -

1982

Level of Expenditure on: IN-HOME ENERGY / GASOLINE	LOW LOW	LOW MED	LOW HIGH	MED LOW	MED MED	MED HIGH	HIGH LOW	HIGH MED	HIGH HIGH	ALL
TYPOLOGY CELL NAME	CHURCHMICE		ROADRUNNERS		BEAVERS		BEARS		HIPPOS	
EXPENDITURES: (continued)										
DOLLAR										
HOUSEHOLD FURNISHINGS & EQUIPMENT	732	1143	1157	954	1297	1297	1942	1487	1653	1270
RECREATION	606	1325	1498	1011	1408	1765	2360	1870	3266	1590
READING & EDUCATION	219	405	399	423	492	516	445	741	696	493
IN-HOME ENERGY COSTS	686	745	758	1173	1182	1210	2052	1893	1995	1265
GASOLINE	133	913	2209	135	955	2219	119	952	2557	1083
% EXPENDITURES										
FOOD	20.3	15.5	14.3	19.3	15.6	15.4	17.9	14.4	14.0	16.2
FOOD IN EATING PLACES	3.0	3.4	3.6	3.4	3.0	3.5	2.4	3.3	3.2	3.2
SHELTER	24.5	18.4	15.8	23.1	18.2	15.1	25.0	19.3	15.7	19.1
OWNED LIVING QUARTERS	10.8	11.3	10.8	12.4	11.6	9.8	12.2	11.8	9.2	11.2
RENTED LIVING QUARTERS	6.3	2.9	1.8	2.7	1.3	0.8	2.7	0.8	0.8	2.0
HOUSEHOLD OPERATION	5.1	4.3	3.6	5.3	4.2	3.7	5.6	4.6	4.0	4.4
CLOTHING	5.1	5.6	5.2	5.9	5.9	6.0	5.6	6.1	6.3	5.8
TRANSPORTATION	7.5	12.5	15.9	6.5	11.3	15.0	5.2	10.4	15.4	11.1
TRANSPORTATION SERVICES	2.4	1.6	1.0	2.1	1.3	0.9	1.5	1.4	1.1	1.5
TOBACCO & ALCOHOLIC BEVERAGES	2.9	2.6	2.7	2.8	2.9	2.9	2.7	2.7	2.7	2.8
HOUSEHOLD FURNISHINGS & EQUIPMENT	3.8	3.6	3.0	3.6	3.5	3.2	4.4	3.1	3.1	3.4
RECREATION	3.1	4.3	4.3	3.5	3.8	4.0	4.1	3.7	5	3.9
READING & EDUCATION	1.3	1.3	1.0	1.5	1.3	1.2	1.3	1.5	1.3	1.3
IN-HOME ENERGY COSTS	3.9	2.5	2.1	4.5	3.3	3.0	5.4	4.2	3.7	3.5
GASOLINE	0.8	3.0	6.0	0.5	2.7	5.4	0.3	2.1	4.7	3.0

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